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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Konstantinos E. Spartiotis

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11/17/2004

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EXAMINER

SUCHECKI, KRISTYNA

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,037

Applicant(s)

SPARTIOTIS ET AL.

Examiner

Krystyna Suchecki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-51 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION***Drawings***

1. The drawings filed 09/04/02 are objected to because they have black shading (Figure 13). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on applications filed in the United Kingdom on 12/22/00 and 08/10/01. It is noted, however, that applicant has not filed a certified copy of the 0031542.4 and 0119559.3 applications as required by 35 U.S.C. 119(b).

Claim Objections

3. Claims 1, 2, 7, 14-17, 19-23, 29-31, 44 and 49-51 are objected to because of the following informalities: Claims 1, 2, 14-17, 19-23 and 49-51 are objected to for “operable to” language. The language is a mere allegation of performance, and the claim provides for no physical thing to perform the recited function. The claims will be examined as if there were some physical object to perform the stated functions. Claim 7 recites “an imaging system according to 1”. For examination purposes, Examiner assumes applicant intends “an imaging system according to claim 1.” Claims 29 and 30 recite “notebook or laptop computer” for which there is no proper antecedent. Claim 31 contains reference to “high speed,” which is relative terminology with no definite meaning from which a person of ordinary skill can ascertain the meaning. Claim 44 contains a reference to “drawing.” For examination purposes “drawing” will be interpreted similarly to claim 17 to mean “during.” Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 38-40 provide for the use of dental panoramic imaging, dental computerized tomography and in-line high energy radiation inspection, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is

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intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

7. Claims 38-40 are rejected under 35 U.S.C. 101 because the claimed recitations of uses, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in claims which are not proper process claims under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-7, 9-19, 23-28, 33-39 and 41-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Hsieh (US 5,265,142).

10. Regarding Claims 1 and 33, Hsieh teaches an imaging system and method for high energy radiation direct conversion scan imaging, comprising:

- a. a high energy radiation source member (13);
- b. a semiconductor high energy radiation direct conversion imaging device including a plurality of imaging cells, each imaging cell comprising a detector cell (18) and a readout cell for producing imaging cell output values representative of high energy radiation incident on said detector cell (Column 4, lines 11-19);

- c. said source member and/or said imaging device arranged to move substantially continuously relative to an object position for scanning an object at said object position (Column 1, lines 34-35); and
 - d. wherein said readout cells are operable to readout (Column 5, lines 5-7) said imaging cell output values at time intervals substantially corresponding to an object image point (Column 5, lines 4-5) traversing half the distance or less of a detector region in the scanning direction during a scan (Column 2, lines 29-43).
11. Regarding Claims 2 and 34, Hsieh teaches an imaging system and method, operable to read out an image cell value from each of at least a subset of said plurality of imaging cells during each of said time intervals (Column 5).
12. Regarding Claims 3 and 35, Hsieh teaches a system and method, wherein said source member and/or said imaging device are moveable to image a part of an object in said object position from two or more positions (Column 5, lines 53-56).
13. Regarding Claims 4 and 36, Hsieh teaches a system and method, wherein said source member and/or said imaging device are arranged to rotatably move relative to said object position (Figure 4).
14. Regarding Claims 5 and 37, Hsieh teaches a system and method, wherein said source member and/or said imaging device are rotatably moveable about a moveable axis (19) of rotation.
15. Regarding Claims 6, 7, 38 and 39, Hsieh teaches a dental panoramic imaging system and method and a dental computerised tomography imaging system and method, comprising an

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imaging system according to claim 1, since no structure is recited to distinguish the device and method of Claims 6, 7, 38 and 39 from the system and method of claims 1 and 33.

16. Regarding Claim 9, Hsieh teaches a system, wherein said source member comprises a support (gantry) for a high energy radiation source.

17. Regarding Claim 10, Hsieh teaches an imaging system according to claim 1, wherein said source member comprises a high energy (X-ray) radiation source.

18. Regarding Claim 11, Hsieh teaches an imaging system according to claim 9, wherein said high energy radiation source comprises a steerable (“wobbled”) beam high energy radiation source.

19. Regarding Claim 12, Hsieh teaches an imaging system according to claim 11, wherein said steerable beam high energy radiation source comprises an electrically steerable beam (Column 5, lines 10-23 and Column 2).

20. Regarding Claims 13 and 41, Hsieh teaches a system and method wherein said high energy radiation source is operated to continuously radiate said high energy radiation during said scanning. This is shown since Hsieh continually collects data while the source is scanned (Column 4).

21. Regarding Claims 14 and 42, Hsieh teaches a system and method, wherein said imaging device is operable to readout said imaging cell output values at time intervals corresponding to an object image point traversing a part of said detector region (Column 5, lines 2-5 and Column 2, lines 29-43).

22. Regarding Claims 15 and 43, Hsieh teaches a system and method, wherein said imaging device is operable to readout said imaging cell output values at time intervals substantially

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corresponding to an object image point traversing half a detector region (Column 5, lines 2-5 and Column 2, lines 29-43).

23. Regarding Claim 16, Hsieh teaches an imaging system according to claim 1, wherein said readout cell is operable to readout said imaging cell output values during said traversing of said detector region (Column 4 and Column 1, lines 34-35). This is taught since the continuous rotation of the gantry while the measurements on the detector are made would require the measurements to be continuously read out.

24. Regarding Claim 17 and 44, teaches an imaging system according to claim 16, wherein said readout cells are operable to readout said imaging cell output values substantially continuously during said traversing of said detector region (Column 4 and Column 1, lines 34-35). This is taught since the continuous rotation of the gantry while the measurements on the detector are made would require the measurements to be continuously read out.

25. Regarding Claims 18 and 45, Hsieh teaches a system and method, wherein said detector region comprises a detector cell (18).

26. Regarding Claim 19, Hsieh teaches an imaging system according to claim 1, wherein said readout cells are operable to readout said imaging cell output values after said traversing (Column 4, lines 58-63).

27. Regarding Claims 23 and 46, Hsieh teaches a system and method, wherein said imaging device is operable to readout imaging cell output values for at least some of said plurality of imaging cells of said imaging device (Column 4, lines 20-22).

28. Regarding Claim 24, Hsieh teaches an imaging system according to claim 1, comprising a plurality of imaging devices (Column 5, line 1)

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29. Regarding Claims 25 and 47, Hsieh teaches a system and method, wherein each of said plurality of imaging devices are readout individually (Column 4, lines 20-22).

30. Regarding Claims 26 and 48, Hsieh teaches a system and method, wherein two or more imaging devices are coupled together for reading out said imaging cell output values from more than one imaging device (item 18).

31. Regarding Claim 27, Hsieh teaches an imaging system according to claim 1, interfaceable to data acquisition (DAS) and control apparatus (Column 5, lines 5-9 and 42-67) for receiving and storing imaging cell output values.

32. Regarding Claim 28, Hsieh teaches an imaging system according to claim 27, wherein said data acquisition and control apparatus comprises a personal computer (25).

Claim Rejections - 35 USC § 103

33. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

34. Claims 8 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh.

35. Regarding Claims 8 and 40, Hsieh teaches a system and method, for in-line high energy radiation inspection system, wherein said source member and/or said imaging device (arranged on a gantry) collects multiple pairs of image projections (Column 5, lines 53-56)

36. Hsieh fails to explicitly show the system and method as arranged for linear movement relative to said object position.

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37. However, it is well known in the art to either translate an object linearly with respect to a gantry or move the gantry linearly with respect to an object in order to obtain multiple image slices of the object. The linear motion of the gantry or object would allow an ordered acquisition of data with respect to the object imaged.

38. Therefor, it would have been obvious to one of ordinary skill at the time the invention was made to translate a gantry linearly with respect to an object to be imaged in the system and method of Hsieh in order to obtain multiple image slices of the object. The multiple image slices would require multiple sets of data projections, which Hsieh implies gathering. The linear motion of the gantry would allow an ordered acquisition of data with respect to the object imaged.

39. Claims 20-22, 31, 32 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh in view of Izumi (US 6,262,408) and Bluzer (US 4,636,980).

40. Regarding Claims 20-22 and 49-51, Hsieh teaches an imaging system above with readout cells operable to readout imaging cell output values. The imaging cells are part of detector elements (18).

41. Hsieh fails to specifically teach the readout of imaging cell output values at a rate of substantially 5MHz or 10MHZ or more or 20 MHz or more, nor does Hsieh teach readout of imaging cell output values at a frame rate of 60 frames/second, 100 frames/second or 200 frames/second. Hsieh is silent as to whether readout cells comprise integrated circuitry, whether the cells are "high speed" or how the cells are made.

42. Izumi teaches an integrated circuitry imaging cell comprising a detector cell and a readout cell (Column 5, lines 44-67). The imaging cell provides improved response time and can deal with dynamic images (Column 3, lines 40-42). The detector imaging cell allows acquisition of dynamic images at a rate of 33 msec/frame [303 frames per second] (Column 8, lines 31-38). The imaging cell includes readout cells comprising high speed integrated circuitry fabricated in accordance with one or more of the following technologies: Op to electronics (photolithography). However, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has been treated for its contents but has not been given patentable weight.

43. Bluzer teaches an imaging device where in an integrated circuitry imaging cell provides readout at a rate substantially 5MHZ, 10MHZ or 20MHZ or more (50MHZ) and a readout of approximately 30 frames per second (Column 1, lines 30-52). Trade-offs are made between the frame/second and the Hz readout values based on post processing requirements for noise or speed (Column 1, lines 30-52). The device provides fine sensitivity, resolution and a dynamic range of the input radiation (Column 2, lines 44-52 and Column 6, lines 56-63).

44. Between Izumi and Bluzer, a range of readout values are established and used for particular results. The trade-offs between a particular frame/second and a particular Hz readout value determine whether the invention will lead to dynamic imaging of an object or a dynamic range of operation of the input radiation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to balance the trade-offs between particular frame/second and Hz readouts of the imaging cell to have a system with a readout rate of substantially 5MHZ, 10MHZ or 20MHZ or more or a frame rate of 60 frames/second, 100

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frames/second or 200 frames/second in Hsieh, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. One would be motivated to find an optimum balance to have adequate response to changes in input radiation values, and also an adequate response to object motions during imaging. A higher frame/second would be required in a situation where, for instance, a contrast solution were being moved in the blood stream, which is a very dynamic imaging condition. A slower frame/second could be used for a contrast moving through the intestines. Based upon the needs, the correct frame/second readout would need to be selected. Likewise, the readout in Hz would be selected based on needs and goals. A particular Hz imaging cell could be selected based on post processing requirements for noise or speed. The resulting device would be a high speed integrated circuitry device formed in accordance with certain methods. Though the imaging cell of Bluzer is not expressly linked to an x-ray system, the cell of Bluzer is easily adapted for use in x-ray systems by the inclusion of a scintillation panel.

45. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh in view of Schick (US 6,134,298) and Everything USB.

46. Regarding Claims 29 and 30, Hsieh teaches an imaging system with a personal computer as above.

47. Hsieh fails to teach an interface to a personal computer, notebook or laptop computer using either a USB or USB2 interface bus.

48. Schick teaches the use of USB interfaces in imaging systems (Abstract). The imaging device is adapted for use with a USB interface due to the prevalent use of USB ports, and the

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elimination or occupation of other ports on a computer (Column 2). The use of USB ports, and concurrent adaptation of devices to interface with a USB port, allows an imaging system user to purchase a computer without purchasing certain additional slots [without the need to upgrade components at the time of purchase] (Column 2). This saves the user money and space for the computer purchase.

49. Everything USB teaches that a USB2 is an adaptation and improvement to the USB interface. It is backwards compatible: it is able to function with USB devices and functions as a USB port, while also functioning as a higher bits/second device.

50. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use either the USB device of Schick, or the USB2 device of Everything USB, in the imaging system of Hsieh, since the use of a USB or USB2 port and device would allow Hsieh to having an imaging system with fewer computer upgrades required at the time of purchase. Hsieh could use either the USB or the USB2 devices as needed, though the USB2 would overcome certain deficiencies of Schick, such as by provided higher bits/second transmissions.

Conclusion

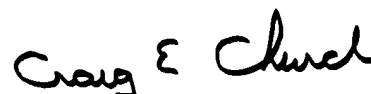
51. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (571) 272-2495. The examiner can normally be reached on M-F, 9-5.

52. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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53. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink that reads "Craig E Church". The signature is written in a cursive, flowing style.

Craig E. Church
Primary Examiner